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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/938,412	08/23/2001	Wan-Thai Hsu	UOM 0211 PUSP	9985

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EXAMINER

KWOK, HELEN C

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,412

Applicant(s)

Hsu et al.

Examiner

H. Kwok

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4 and 5 6) ☐ Other:

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DETAILED ACTION

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Claim Objections

2. Claims 1-23 are objected to because of the following informalities. Appropriate correction is required.

In claim 1, line 7, the phrase "a support" should be changed to -- the support --.

In claim 4, line 3, the word -- structure -- should be inserted after the word "electrode".

In claim 20, line 7, the phrase "a support" should be changed to ~~the~~ the support --.

In claim 23, line 6, the phrase "a support" should be changed to -- the support --.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 4, 6-18 and 20-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Publication titled "Geometric Stress Compensation for Enhanced Thermal Stability in Micromechanical Resonators" (Hsu et al.).

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With regards to claims 1-2, 4, 6-18, Hsu et al. discloses a micromechanical resonator comprising a semiconductor substrate, a single lateral flexural-mode resonator made of polysilicon includes first and second ends; a temperature-compensating support structure having a folding truss support or a pair of stress generating support members is separated from the resonator and anchored to the substrate to support the resonator at the first and second ends; a drive electrode structure and a sense electrode structure made of plated metal are formed on the substrate. (As observed in Figures 2-4; pages 945-948, section I to IV).

With regards to claims 20-23, the claims are commensurate in scope with the above claims and are rejected for the same reasons as set forth above. Furthermore, the frequency versus temperature curve have peaks and valley and increases in dependance of the resonator. (See, Figures 1 and 9).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

— obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Publication titled "Geometric Stress Compensation for Enhanced Thermal Stability in

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Micromechanical Resonators” (Hsu et al.) in view of Publication titled “Micromachining Technologies for Miniaturized Communication Devices (Nguyen).

With regards to claims 3 and 5, Hsu et al. does not explicitly suggest a submicron lateral capacitive gap between the resonator and the electrodes. Nguyen discloses a resonator beam, as observed in Figure 9, a submicron gap between the resonator and the electrodes. It would have been obvious to a person of ordinary skill in the art at the time of invention to have readily recognize the advantages and desirability to implement the device of Hsu et al. to provide a submicron gap between the resonator and the electrodes as taught by Nguyen to reduce electrode series resistance. (See, page 29, last paragraph of Nguyen).

With regards to claim 19, it would have been obvious to an artisan to use the device as a temperature sensor since this is a mere design expedient to the manufacturer and since, as disclosed on page 948 of Hsu et al., the device can be used in watches or wireless transceivers, meaning that the device can be used in other preferred embodiments without departing from the scope of the invention.


Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The references cited are related to a vibrating micromechanical device having a resonator.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen Kwok whose telephone number is (703) 308-8149.


Helen C. Kwok
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hck
November 15, 2002